

SECTION 15710

STEAM AND CONDENSATE SPECIALTIES AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Scope
 - 1. Provide labor, materials and equipment to provide the steam and condensate specialties, including accessories as required for a complete installation.
- B. Description Of Equipment
 - 1. Silencers
 - 2. Condensate Return Unit
 - 3. Condensate Return Tank and Pumps
- C. Related Work Specified Under Other Sections
 - 1. General Mechanical Requirements.”
 - 2. Aboveground Piping Systems.”
 - 3. Thermal Insulation.”
 - 4. Environmental Equipment.”

1.2 QUALITY ASSURANCE

- A. Requirements Of Regulatory Agencies
- B. Manufacturer And Contractor Personnel Qualifications
 - 1. Employ for welding, brazing, soldering and cutting work, qualified personnel as defined by specified code and certified by the National Weld Test Bureau, the Hartford Steam Boiler and Inspection Company or other approved bureau or agency.
 - 2. Manufacturers’ field representatives shall be technically qualified personnel who are regularly employed by the respective manufacturers for the task for which their participation is specified.

1.3 SUBMITTALS

- A. Refer to Division 15 Section “General Mechanical Requirements” for applicable requirements.
- B. Include noise level data for steam PRV valves and sound attenuation data for supplementary sound control provisions. Submit valve data for approval on valve manufacturer’s Application-Engineering Data Form. Include recommended installation details for proposed valves where they deviate from installation details indicated.
- C. Sequentially list traps by “ST” prefix with a tabulation of model number, body pressure rating, inlet pressure, back pressure, “lock-up” pressure, normal condensing rate, actual continuous

condensing rate, safety factor, lift in feet, orifice size, and trap location. See “STEAM TRAPS”.

- D. For condensate pumping equipment include curves, selection points, impeller diameters, cuts, statements, calculation and data sheets required to verify or clarify conformance to requirements.
- E. Submit complete shop drawings for attachment of supporting elements to building structure if supporting elements are other than the specified commercially available types.
- F. Submit integrated electrical drawings indicating power, control and instrument wiring interfacing with work under separate contracts for field work as well as factory assembled work. Manufacturer’s electrical drawings are acceptable only when modified and supplemented to exactly reflect CONTRACT conditions. The system of drawings shall include: Overall schematic (elementary) diagram of the entire system of power circuitry detailing the number of and the wire and conduit sizes; wiring diagrams showing terminations of interconnecting conductors between component assemblies, systems, control devices, and control panels complete with conductor identification, number of conductors, conductor and conduit size of interconnections; sequence of operation for components, assemblies or systems.
- G. Test reports: Submit copies of certified test data.

1.4 RECORD DOCUMENTS

- A. Refer to Division 15 Section “General Mechanical Requirements” for applicable requirements.

1.5 OPERATION AND MAINTENANCE DATA

- A. Refer to Division 15 Section “General Mechanical Requirements” for applicable requirements.

PART 2 PRODUCTS

2.1 PIPING MATERIALS

- A. Piping materials and fittings: Refer to Division 15 Section “Aboveground Piping Systems.”
- B. Special service valves: Refer to Division 15 Section “Valves.”

2.2 PIPING SPECIALTIES

- A. General
 - 1. Refer to Division 15 Section “Piping Specialties” for additional applicable piping specialties.

- B. Vacuum Breakers (Steam)
 - 1. Vacuum breakers: Stainless steel ball and spring, threaded outlet, rated for 365°F, at 25 psig. Provide with isolating valve on inlet side. Size as indicated on the DRAWINGS.
 - a. Johnson VB8.
 - b. Crane.
 - c. Hoffman.
- C. Thermostatic Air Vent
 - 1. Thermostatic air vent: Rate for the temperatures, pressures and service to be encountered. Provide with isolating valve on inlet side.
 - a. Spirax/Sarco AV13.
 - b. Other approved.
- D. Silencers
 - 1. *Silencers or noise suppressors [D]*: Provide in discharge of steam pressure reducing valves where pressure reducing valves furnished do not meet noise criteria, provide. Furnish expanded outlet type with internal construction consisting of energy absorbing slots and vanes. Submit valve data for approval on valve manufacturer's Application-Engineering Data Forms.
 - a. Leslie.
 - b. Spence.
- E. Drip Pan Elbows
 - 1. *Drip pan elbows [D]*: Provide cast iron drip pan elbows at steam relief valves.
 - a. Consolidated (Manning, Maxwell and Moore) Type 1665.
- F. Steam Traps
 - 1. Provide thermodynamic traps for high pressure steam mains and F&T traps for low pressure steam mains and branches at: Low points; ahead of riser; end of mains; 300-foot maximum intervals in straight pipe. For air heating coils and hot water convertors, furnish F&T traps.
 - 2. Size steam main, branch and riser traps for not less than 3 times actual condensing rate normal to the system.
 - 3. TYPE F & T - Float and thermostatic trap: With AISI Type 300 Series stainless steel heliarc welded floats and operating mechanism and hardened 13% chrome stainless steel seat and valve. Balanced pressure type thermostatic element with stainless steel caged corrosion resistant alloy bellows charged with a fluid suitable for service with condensate pH of 6.0. Traps shall permit removal and replacement of operating and wearing parts without disturbing piping connections to trap body. Shield bellows from direct blast of steam and condensate. Fit body with drain plug.
 - a. Spirax Sarco.
 - b. TLV.

4. Thermodynamic type trap shall be in-line renewable zero steam loss disc type, having stainless steel body and trim, with threaded end connections. Trap shall have replaceable capsule. Trap shall have an integral strainer, stainless steel strainer screen, and integral blowdown valve.
 - a. Yarway 721.
- G. Moisture Separator
1. ANSI B 16.5 Class 150 flanged carbon steel baffle type moisture separator with threaded drain and air vent, and one piece high temperature insulation jacket with strap and buckle fasteners, silicone rubber coated glass fiber inner and outer facing, polyester stitching and nylon draw cords.
 - a. Spirax Sarco, Type S5 with IJ-S5 Jacket.
- H. Steam Pressure Reducing Stations
1. *Pressure reducing stations [D]*: Provide each pressure reduction stage with pressure reducing valve, valved bypass, strainer and pressure gage on up-stream side. Provide relief valve and pressure gage on downstream side. Rate the first valve downstream of the pressure reducing valve with the same pressure rating as the upstream valve. Furnish bypass globe valve around each pressure reduction stage, fitted with 500 Brinell seat and disc. Valve size shall be approximately as large as pressure reducing valve orifice. Piping downstream of station inlet shutoff valve and upstream of station outlet valve shall be Schedule 80. Other reducing station piping shall be system standard pipe.
 2. Noise control accessories: Pressure reducing valves shall preclude noise levels exceeding 80 dBA measured 4 feet downstream of valve and 3 feet from pipe. The CONTRACTOR shall be responsible for sound attenuation necessary to obtain specified noise criteria. The required diffusers, silencers and other supplementary noise control provisions to comply with specified noise criteria, shall be the responsibility of the CONTRACTOR, who shall determine the extent of "acoustical lagging" required, upstream and downstream of the PRV. Approved modifications to piping shown on DRAWINGS, necessary to accommodate sound attenuation provisions, shall be provided.
 3. *Pressure Reducing Valve [D]*: Self operated, direct piston balanced type with AISI Type 420 stainless steel plug and AISI Type 410 stainless steel, stellited seat rings capable of 100 : 1 turndown on flow.
 - a. Spence, Type E.
 4. *Pressure Regulator Pilot [D]*: 250 db. Class, cast iron
 - a. Pressure Reduction for first and second stage: Spence Type D.
- I. Pressure Safety Valves – Steam (PSV)
1. *TYPE PSV [D]*: Spring loaded single disc type with bronze body and disc, side outlet and lifting lever with MPT inlet per ASME Code, with stamp, for a maximum service of 250 PSIG saturated steam. Safety relief valve shall be submitted together with the first and second stage PRV's as a single submittal.
 - a. Spence, Model 41.
 - b. Consolidated Div. of Dresser Industries.
 - c. O.C. Keckley Co.
 - d. Kunkle.

- e. Nicholson.

2.3 EQUIPMENT

A. Condensate Return Unit

1. *Condensate return unit [D]*: Centrifugal, duplex type unit with pumps vertically mounted below 24 inches, receiver, mechanical alternator and 3-position control switch to automatically transfer the operation from one pump to the other, and to operate both pumps in the event of abnormal conditions. Pumps designed to operate at 209 degF without vapor binding and without cavitation under all system operating conditions. If cavitation occurs replacement of entire pump assembly is required.
2. *Flow control valve [D]*: Provide equivalent to Griswold and Hart valve, and nonslam check valve at discharge of each pump.
3. *Receivers [D]*: Of cast iron or steel with control panel, starters, a mechanical alternator, float switch, seamless copper float, gauge glass and strainer on the return inlet. Furnish receiver for an internal pressure of 25 PSI sized for indicated storage capacity.
 - a. Domestic Pump Company, Type CBE.
 - b. Roth Pump Co.

PART 3 EXECUTION

3.1 EQUIPMENT INSTALLATION

A. Drip Pan Elbows

1. Run drains from pan to hub outlet or floor drains. Run vent through roof. Drip pan elbows shall not carry weight of discharge piping.

B. Condensate Return Unit

1. Install unit per manufacturer's instructions.
2. Perform start-up, adjustment of equipment and calibration of controls per manufacturer's instructions to verify a complete, properly functioning, installation with capacity as scheduled.

3.2 EQUIPMENT TESTING

- #### A.
- Demonstrate satisfactory performance of equipment to the ARCHITECT-ENGINEER. Demonstrate correct functioning of controls.

END OF SECTION

Revision History	
Date	Rev. No.
E	0
F	0
02-19-09	0

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